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TICOM/I-109

TOP SECRET

Attached is a translation of a report by Lt. LUDWIG of Chi Stelle OB.d.L: (Ref. B) based on questions set for him at ADI(K).

The report covers answers on the following subjects :-

a) The Dieppe raid.

b) Warnings of major operations (Arnhem, etc.).

c) Organisation of Referat B.

d) Interception of weather and exploitation.
(Husum, W 22)
Organisation of Bomber Code Work.

e) Ground nets in Britain.

British Machine (5B)
4 Z (General recypher) (South and West)
Syko (Med. and West)
Slidex Exercise Spartan -
Reports of Kdr. d. NA 5.
M 209 (9th Air Force Troop Carrier Command.)
8th Fighter Command
(65 and 67 Wing)
Delays in decoding.

f) Call-sign systems of the Allies.

TICOM

No. of pages : 53.

24 Sept 1945.

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TOP SECRET

Monitoring on the Landing near DIEPPE on 19.8.1942 by the German Sigint.

I. Introduction.

When the author was transferred in April, 1942, to Section B at ASNIERES near PARIS, he received there the order to evaluate the wireless traffic of the RAF Army Cooperation Command. As only a few flying formations were subordinate to this Command (Close Reconnaissance aircraft in 32,33,34,35,36,37 and 39 Wings, Transport formations in 38 Wing - later 38 Group - and Special formations such as Anti-Aircraft Co-operation Units under South Farnborough) the monitoring brought little result. The Ground wireless networks were the basis of the monitoring.

On the other hand, a systematic attempt was made to clarify the air support wireless traffic, which had appeared during combined exercises of the Air Force and Army in Great Britain, in co-operation with the Army (Sigint Evaluation Station 5). In this connection the following (amongst other things) was determined after a comparatively short time:

1) During Army Exercises fairly strong units of Fighter Command, also elements of the 2nd Bomber Group of Bomber Command appeared in addition to the weak forces of the A.C. Command.

From this it was concluded that in the event of Invasion available forces of Fighter Command and the 2nd Bomber Group would support the Army, and not, as might have been expected in view of reports in the Press, on the Radio, and from Agents, reserve forces of A.C. Cmd.

2) The tactics of Army-Air co-operation were elucidated in all details, for instance :

a) Duties and wireless links of the Army Air Support Controls (AASC).
b) Duties of the Air Support Links.
c) Duties of the Tentacles.
d) Frequency Bands used.
e) Call sign usage.
f) Procedure and form of reports, from the reports of Close Recce aircraft or the request by the Tentacles for Air support through the Operational Orders up to victory report.
g) Abbreviations.
h) Reporting Grid used.

3) From plain language messages numerous unit designations and locations were recognised, e.g. :- the 38 Wing with 295, 296 and 297 Squadrons, the individual Wing H.Q.'s etc. 2nd Bomber Group, 88, 226 Sq., 400, 414, Tact/Recce Sq. were particularly often named. Especially many plain language data always appeared at the end of the Exercises (Tuesday evening Umpires' Conference in the HQ of the 34 Wing etc). The Umpire Networks were also very informative. The importance of this branch of our work was quickly recognised and a company (9/3) was detailed to concentrate on monitoring these exercises. The number of exercises monitored was very large, on several occasions exceeding 100 a month. The co-operation with the Army Sigint was very close and was further strengthened by an exchange of liaison officers.

The following exercises, which were very closely monitored and produced many results, are still in my mind :

Exercise "TIGER" in South East England, Spring 1942.
Exercise "LIMBER" in East England, somewhat later.
Exercise "DRYSHOT" in West Scotland or North West England, shortly before DIEPPE.

The interception and immediate evaluation of the requests by the Tentacles for air support was regarded as particularly important, these, as far as can be recalled, took place in the following form :-

A) Many tanks at V 1980 (Description of target).
B) 1 Sq. Fighter (Operational Strength wanted).
C) ASP (As soon as possible) (Desired Time of Operation).
D) Not N of river (Special instructions in order to avoid attacks on own troops).
E) Heavy AA. (Defence to be expected).
F) 1245. (Time of origin).

When the landing near DIEPPE took place in August 1942, the German Sigint had excellent working material at its disposal which was now, in time of need, most valuable and subsequently completely justified the employment of the forces which had hitherto monitored the exercises in Great Britain.

II. The Landing near DIEPPE on 19.8.1942.

The preparations for the landing (embarkations etc) and the approach of the landing fleet were not picked up by the German Sigint.

Against that the wireless traffic which began at the commencement of the landing, both by the army and the air force, was almost completely intercepted.

The following circumstances proved to be favourable for the German Sigint :

1) The intercept company (9/3) responsible for the monitoring of landing traffic was favourably situated in DEAUVILLE, disposed of good line connections with the German fighter defence and also with the army forces responsible for defence against the landing.

2) The wireless traffic during the landing was largely carried out on naval frequencies (roughly in 2000 kc. Band), which at that time were being continuously monitored by the same company in order to determine convoy schedules, sea rescue incidents etc. For this reason the importance of the occurrence was immediately recognised.

3) The CC of the company, the wireless operators and the evaluators of 9/3 disposed of considerable experience relative to all details of the wireless traffic after monitoring the exercises in Great Britain, as described above.

4) By continuous contact with the army an interpretation of the cover names appearing (e.g. green Peter, red Peter etc.) was quickly arrived at from the knowledge of our own situation.

5) The OC Company of 9/3 realised that the important reports were to be transmitted first to the fighting troops of the army and to the air force for immediate evaluation. As the available evaluation personnel and the line connections were not sufficient to serve the higher HQ's simultaneously as well (Luftflotte 3 and Section B for GAF Ops. Staff) he consciously accepted the risk of any blame from these HQ's. He subsequently found complete approval of this action.

6) Conversely the Army Sigint had given preference to supplying the higher HQ's with reports and on the other hand done less for the combattant troops. In this case the duplication of work by the army and air force was proved to be advantageous :

Airforce : Immediate evaluation for Fighter defence and Army formations.
Army: Reports to the higher HQ's.

As far as I can remember the following wireless links were monitored with good results during the landing :

1) Links between the HQ Ships and Great Britain (PORTSMOUTH)
2) Links between the units landed and the HQ Ships.
3) A large amount of purely naval traffic.
4) Wireless traffic of the flying formations.
5) Wireless traffic of the Sea Rescue Service.

The best information was given in the plain language wireless messages of the units which had landed. From these reports the course of the operation, the initial partial successes, the difficulties encountered and finally the withdrawal were apparent. Towards midday the requests for air support by the army units fighting on land became ever more urgent. The situation thus recognised in the individual sectors was fully exploited by the German commanders.

Exact details of impending RAF operations were repeatedly given by the aircraft control station in roughly the following form :-

"2 Squadrons Fighter and 1 Squadron Bomber will attack BISMARCK at ..... o'clock"
(BISMARCK = cover name for a fortification, these cover names were soon elucidated).

Such reports were almost without delay phoned through to the Fighter Controls (JAFUES) and enabled them to employ the German fighter formations to the best possible advantage.

The widely held opinion that urgent wireless messages could quite happily be sent in plain language shortly before the operation because there would not be time for the opponent to take counter measures, was disproved on many occasions at DIEPPE.

III. Evaluation of the DIEPPE Experiences.

The successes of Sigint brought it very much praise from the higher commands , amongst other from the C. in C of the Fleet and from the Army. Owing to imprudence, the Public was also made aware of these successes. Wireless messages were published in the Press. Even Reichsmarshall Goering mentioned these messages in a speech. The improved camouflage of wireless traffic in the exercises carried out in Great Britain after DIEPPE is apparently to be traced back to this publicity.

For the GAF Sigint the following final conclusions were drawn :-

1) The line connections had to be further developed as quickly as possible.
2) In case line connections should fail, wireless links had to be well practised.
3) The monitoring of wireless traffic during the exercises in Great Britain had to be further strengthened since this monitoring represented the best training for a new landing to be expected later.
4) Our own D/F base had to be further developed since it had shown itself insufficient during DIEPPE.

TOP SECRET TICOM/I-109.

Advance Warnings and Aircraft Route Tracking by SIGINT.

I. General

On the outbreak of war it was considered that the possibilities of Sigint were limited to determining the Order of Battle and strength of the enemy. In December, 1939, a fairly large Wellington formation of the R.A.F. attempted a day attack on north German territory. Its wireless traffic was intercepted and evaluated and the results (locations, heights) were immediately and directly reported to the German fighter defence, partially contravening existing regulations. On the basis of these reports a Fighter Geschwader was enabled to take off in good time and to attack the formation from favourable firing positions with great success.

After this convincing success, the development of immediate evaluation and the forming of direct co-operation between the Sigint intercept stations and the flying formations was regularly urged especially by the younger men. These exertions came up against numerous difficulties - lack of understanding of bureaucratically minded higher authorities who did not want to be diverted from routine, too strict an interpretation of the secrecy regulations (behind which inefficiency was often hidden), from those who wanted to hinder direct co-operation with the flying formations and so on.

Gradually, however, the young men got their own way. So called "Reporting Centres" were eventually set up; these collected the reports from the intercept stations, evaluated them and passed them on in a suitable style to the formations. (Reporting Centre BIRK ((Fighters)), Reporting Centre I ((Bombers))).

In the course of the years as the German defence got weaker and the Allied Air Force stronger, the activities of the reporting centres became all the more important especially in respect of :

1) Advance warnings for our own defence, the civilian population, the army and the railways.
2) Aircraft route tracking for own fighter defence.

Short term advance warnings were given a few hours or even minutes before the attacks. Long term predictions of larger allied operations - for instance, the Invasion or the AACHEN offensive - were passed by the strategic evaluation of Section B or by 25/351 (previously W. Control ((W.LEIT)) 3 and 14/3). The strategic evaluators had acquired in the course of time such a good specialist knowledge of allied wireless traffic that they were often able to recognise enemy intentions from the slightest indications.

The various possibilities of advance warnings and aircraft route tracking are described below, in so far as they can be remembered. It is pointed out that the author was not a specialist for heavy bomber units, the details of the RAF Bomber Command and the 8th Air Force are therefore fragmentary.

II. RAF Bomber Command. Predictions and aircraft route tracking.

As long as the author was stationed in the West (April 1942 - March 1945) there were always possibilities for advance warnings. For sources of information which dried up there were usually new ones found after a short time. In particular, I remember the following possibilities for advance warning and aircraft route tracking :

1) All airfields in Great Britain occupied by RAF Bombers were monitored continuously day and night. The airfield traffic produced many indications of impending operations, e.g. from tuning traffic, wireless silence etc.
2) From the monitoring of wireless traffic on short waves (6440 kcs. frequencies and later also airfield frequencies in the band above 5000 kcs) operational intentions were currently recognised, e.g. moves forward before operations, taking-off traffic, etc.
3) From weather reports it was often known whether a take off from the Bomber airfields was possible or not.
4) Tuning traffic of the D/F sections before operations of Bomber Command.
5) Tuning traffic of Sea Rescue Boats before operations of Bomber Command (for a long time it was a sure indication, later it disappeared).

6) Interception and D/Fing of ITT sets (German cover name S.[illegible]SCHE, for a long time the best source for advance warning and aircraft route tracking).

7) Interception and D/Fing of Rotterdam sets (German cover name later: [illegible] short)

8) Interception and D/Fing of the wireless traffic (W/T) of single aircraft, e.g. reports that the operation would have to be broken off owing to engine trouble, SOS reports, emergency D/Fing.

9) Wireless orders from HQ's to individual or all formations of the Group operating, e.g. to break off the operation (mostly encoded in Bomber Code).

10) The appearance of escorting long range night fighters of 100 Group. Interception and D/Fing of the "Weapon" Night fighter Search Sets. Since the escorting fighters generally kept close to the Bomber stream, these D/F results produced approximately the flying route of the bomber stream.

11) Broadcasts of the aircraft reporting centre of the A.E.A.F. (cover name - FREISCHUETZ reports). Location of this transmitter near London, call sign Q58. This wireless station worked on several frequencies (short and long wave) and apparently informed by broadcasts all interested stations concerning impending flights of individual aircraft or whole formations. These reports were given in a 3-Letter Code, the decyphering of which was worked at in vain. The larger the formation announced and the longer its planned flying route, so much longer were the messages concerned. The longest reports were accordingly produced by raids of the 8th Air Force and RAF Bomber Command. From the length of the message and a few other points which I cannot remember it was possible to recognize without decyphering whether, for instance, a large R.A.F. Operation was to be expected in the coming night or not. If the wireless station issued one or more particularly long messages late in the afternoon, and if these messages were later repeated by a wireless station near PARIS (presumably aircraft reporting centre FRANCE) for the information of formations stationed in France (Night fighters and A.A. ?), the following was then apparent :

a) A fairly large RAF Operation was impending.

b) The approach flight was to be expected over France. If a deterioration of the weather made the proposed take-off of the RAF bombers impossible at too late moment, the respective messages were explicitly cancelled (cancel my message no. ....), the German flight was thereby enabled to withdraw a prediction of an air-raid already issued.

12) Broadcasts of an American aircraft Reporting Centre in France (presumably of the Di Air Defence Command).

Cover Name: WILDENTEN ((Trans: = wild ducks)).

The set-up of the reports of the Allied Radar service was known since the African campaign. Example :

T 57 ps :8012 wl h a-

Explanation :

t 67 ... ... target no. 67
ps ... ... recyphered details of course, e.g. N E
m 8012 . ... position of aircraft or formation
wl ... ... vessel l = number of aircraft
h ... ... hostile, f = friendly, x = unknown
a8 ... ... details of height in angels

Since the beginning of the invasion, reports of this kind had been continuously intercepted. Generally, only German aircraft were reported; allied aircraft only on the return flight from operations. After a fairly short time most of such traffic disappeared again, apparently because the reports were sent over line connections completed in the meantime.

From a date which I can no longer remember exactly, roughly Autumn 1944, an American wireless station in France, which seemed to belong to the 9th Air Force (I cannot recall the call-sign) reported the Allied formations flying towards the East also. Thereby Sigint acquired a new and very reliable means for advance warnings which was especially important for a timely interception of RAF night attacks.

The locations first reported were generally in the area AMIENS-ABBEVILLE, the last ones just in front of the German frontier.
In so far as the German night fighters were able to achieve any successes in the last months of the war, not the least reason for these was that a timely take-off and correct control of the night-fighters was made possible through the picking up of the report described above.

13) Interception and D/Fing of Jamming transmitters of RAF 100 Group.

Some of the jamming aircraft remained over the North Sea or the Netherlands-Belgium area and others flew with formations. Their appearance was, it is true, not a sure indication of an impending RAF operation. Conversely it could not be said that no RAF operation took place without a simultaneous operation of jamming aircraft of 100 Group and that in the absence of these jamming aircraft a large operation was not yet under way.

14) Interception and D/Fing of the W/T and R/T wireless traffic of bombers.

In contrast to the VIII US Bomber Command the RAF Bombers were very cautious in the way in which they handled wireless traffic. Occasionally, however, reports to their HQ's were necessary, and these were intercepted and D/F'ed on every occasion. In so far as R/T traffic such as that of the Master of Ceremonies or the Master Bomber was carried out on short wave (6440 kcs) or ultra short wave, it was also intercepted. No special successes were, however, produced by it.

15) Interception of the Beam Direction of the J Beam (Cover name RODELBAHN).

The determining of the beam direction was made difficult on account of the narrow pencilling. Favourable results were usually only produced when the beam direction went over a monitoring station. With increasing range the width of the beam also increased, under most favourable conditions therefore only approximate forecasts of the presumable areas of attack were possible (e.g. North Germany, South Germany). Towards the end of the war repeated attempts were made to determine the direction of the beam from monitoring aircraft. Success by this means was only slight, as far as can be remembered.
All the monitoring results of the intercept and D/F stations were collected together at the Reporting Centre. If the indications of an impending RAF operation accumulated, the Head of the Watch gave an advance warning under the cover name "Adler" to all interested stations. If no raid was expected "Taube" was reported.

Special Particulars.

1) 5th B. Group.

The 5th Bomber Group occupied a special position in RAF Bomber Command. Elements flew numerous special day operations, e.g. against dams, harbour installations and also against the "TIRPITZ". By night, the 5th Bomber Group carried out attacks under its own command usually apart from the other forces of Bomber Command. Owing to exceptionally good discipline in the use of wireless and navigational equipment the German Sigint was repeatedly taken unawares, this often brought it complaints from the High Command. For example, I can remember an attack on MUNICH which took place about 5 o'clock in the morning, and the first intercepts were obtained only a short distance from MUNICH. Since the Aircraft Reporting Service had also failed in its task, MUNICH during this raid was allegedly taken completely by surprise without the preliminary Air Raid Alert.

2) 3rd B. Group.

The RAF day raids also, which were mostly flown by the 3rd Group caused Sigint many difficulties. Advance warning was often only possible when the "Lancasters" were almost up to the German Frontier. Only the R/T traffic of the escorting fighters of Fighter Command repeatedly gave a hint of such operations.

In the same way, the special operations of squadrons from TEMPSFORD (138 and 161 Sq.) flying supplies to agents could be picked up neither before nor during the outward flight and at the best on the return flight.

Repeated attempts were made to work out advance warnings of target area or at least to determine subsequently the target area, neither the Wireless Listening nor the Radar Monitoring Services were able to produce any useful results.

3) 8th B. Group.

The wireless discipline of the 8th B. Group was likewise above the average. Often it was only from the weather broadcasts of the HQ's that it was known that aircraft of the 8th Group was operating.

On the other hand, the Mosquitos which were regularly attacking Berlin at the end of the war were picked up, through D/Fing of the Rotterdam radiations, approximately from the Friesian Islands.

III. 8th US Air Force. Advance Warning and Aircraft Route Tracking.

Although the raid forecasts for RAF attacks were made with moderate certainty by Sigint, wrong conclusions occurred now and again, e.g. with the 5th B. Group. On the other hand it can be stated that no attack of the 8th US Air Force came as a surprise. Generally advance warning was given some hours before the raid. The possibilities for this were as follows :-

1) Moves to advance bases and concentrations were sometimes determined by the monitoring of the acrodrome frequencies (W/T and R/T).

2) Splasher Radio Beacons.

During the assembling Splasher Radio Beacons served as a navigational aid. These radio beacons were often switched on, however, without an operation being flown. Conversely, operations were never flown without the Splashers working.

From the locations of the radiating Splasher Radio Beacons sometimes rough inferences would be made on the direction of the attack. If the Splashers in South West England were radiating and not those in North East England, then an attack in the direction of France could be reckoned with, or if the opposite were the case, an attack in the direction of the Heligoland Bight or Norway.

3) Weather Reconnaissance in Assembly Area.

In order to discover the most favourable heights for assembly, weather recce planes took off before operations, these enabled the operational intentions to be recognized.

4) Wireless Traffic during Assembly.

If the weather recce aircraft reported favourable weather, the bombers took off. With the great strength of the VIII B. Cmd, the process of getting into formation always took a long time and often caused difficulties. During this, much air to air R/T traffic on ultra short waves took place.

This traffic was clearly heard also after the withdrawal from France by the intercept stations then situated in Germany. Observation of assembly caused the advance warning "ZUGVOEGEL" (= USAAF operation to be expected) to be issued.

On the basis of the frequencies used, it could be stated even during the assembly which Divisions (sometimes also which Combat Wings) were participating and in what order the Divisions would be in the approach flight.

5) Take-off of the escorting Fighters.

The assembly took place without fighter protection. The fighter formations generally took off when the bombers flew out. The first interception of Fighter R/T traffic was, therefore, at the same time the signal that the assembly of the Bombers was now complete.

6) Checking Point Reports.

When passing the above mentioned checking points the formation leaders had to send a report (W/T Bomber Code) to their HQ. According to the length of the formation and since all messages were not transmitted simultaneously, D/Fing of this wireless traffic produced over a long time a good tracking of the aircraft route.

7) Open Transmitters.

It often happened that VHF transmitter(s) TR 5043, navigational aids, e.g. Meddo or other transmitters remained inadvertently switched on. Running D/F's of these carrier waves again gave the flying route.

8) R/T traffic Bomber-Bomber, Bomber-Fighter, and Fighter-Fighter.

Naturally, the often very lively R/T traffic was continuously D/Fed. From the point of view of contents, the following were some of the results obtained from these traffics :

a) details of flying heights and speeds;
b) positions (We are over Cologne);
c) pointers to the effectiveness of German fighter and Flak-defence;
d) deviations from the original time-table - (We are 20 min. in retard ((sic anglice)));
e) making ready to drop bombs, order to drop bombs.

9. Radio traffic by W/T.

The reports of formations to their ground stations (Division or Combat Wing HQ) and orders from the latter to the formations were mostly sent by W/T, using the Bomber Codes. Plain language was seldom used. The Bomber Code messages were nearly always broken. They contained the following data among others :

a) orders from H.Q.'s, e.g. to break off the operation;
b) details by formations on alterations to the original plan, in order that the fighters might be informed;
c) reports on results after bombing, containing statement whether main or subsidiary target was attacked, whether visually or by instruments, and with what success;
d) damage reports of the individual a/c.

10) D/Fing of the Navigational Aids.
No details remembered. Heddo - (cover-name Laubfrosch short) and GH-radiations (cover-name Diskus) were D/F'd.

11) As long as escorting fighters could not remain with the bomber formation during the whole of the flight, but still had to fly in relays, the relieving fighters flew a direct course to the bomber rendez-vous point. Therefore the D/Fing of the course of these fighters was often more important for identifying the final target than that of the bombers, which nearly always flew a feint course.

IV. Medium bomber formations, advance warnings and route-tracking.

A. 2nd Bomber Group (2nd TAF).

No possibility of predicting raids. Very good radio discipline. Monitoring of this Group therefore produced negligible results.

B. IX Bomber Command (or 9th Bombardment Division, 9th Air Force).

The approach of "Marauder" etc. formations was sometimes tracked by D/Fing of VHF R/T traffic. As the R/T discipline in these formations was also good, results were small.

When IX Bomber Command began, somewhere about December, 1944, to carry out bad weather attacks by means of "Boomerang"-control, this gave Sigint the following novel possibility of obtaining an advance warning: the Boomerang control stations were in the Franco-Belgian area. They were in radio (W/T) contact with one another. The evaluation of this radio traffic (i.e. not the VHF control ground to air) made it possible to determine the approach up to 45 minutes before bombing, and to identify exactly the target areas about 8-25 minutes before bombing. The main control station of these radio networks was in Great Britain and had the call-sign X25. I cannot remember the other call-signs. Evaluation was done without breaking of cipher systems, but solely by means of the data derived from the ground stations.
No details known. The same evaluation was possible for the 8th R/F Group too, as well as for the Boomerang controls in connection with IX B. Cd.

C. 42nd B. Wing and Brigade Tyol (1st USTAF).

Advance warnings were only possible by monitoring and d/fing the R/T traffic. R/T discipline was not as good as with IX B. Cd., so that route-tracking was somewhat easier.

V. Prediction of the Invasion.

1. Setting up of the AEAF.

About the beginning of 1944, 9th US Air Force brought its call-sign use into line with that of 2nd TAF, thus using, as did the latter, call-signs composed of a letter and two figures, e.g. A83. From this it was possible to tell that the Allies had combined into one Command (according to the Press, the AEAF) the British and American close-support Air forces intended for support of the Army.

2. Conclusion of practice traffic in Great Britain.

The very lively practice traffic in Great Britain, in the course of which co-operation between Air Force and Army had been particularly intensively practised, had been continuously monitored from 1942 to 1944. In March 1944, there took place in Southern England another very big exercise, to some extent a final one, with the cover-name "Spartan"; in this exercise particular emphasis was again laid on Air-Army co-operation from a signals point of view. After that, practice activity ceased almost completely, apart from a few radio-exercises.
Conclusion: end of practice activity, preparation of formations for operations.

3. Transfer of units of the 2nd TAF.

The radio networks of the 2nd TAF had already been identified in all essentials by 1943. The radio stations of 83rd and 84th Fighter Group, as well as of 2nd Bomber Group, were always being D/Fed, priority being given to this over other tasks, so that all transfers could be discovered immediately. It was thus clearly seen in April and May that most of the radio stations were transferring to Southern England, with a clear concentration in the Portsmouth-Tangmere area. At the same time 2nd B. Gr. transferred from the area of the Wash to the Reading-Odiham area. When in May the H.Q.'s of 83rd and 84th Groups also transferred to the South Coast this was a clear indication of the proposed direction of attack and of the conclusion of British preparations.

4. Setting-up of XIX US Tactical Air Command, bringing-up to strength of IX and XIX Tactical Air Commands with flying units.

By the Spring of 1944, monitoring of 9th US Air Force had produced the following :

a) IX Air Support Command, later renamed IX Tactical Air Command, was earmarked for support of Army formations. At first only 67th Tact. Recce Group, with 107th, 108th, and 109th Squadrons, and Signals Units (Air Support Parties were subordinated to this unit.

b) Later XIX Tactical Air Command was also mentioned in plain language messages.
This likewise only had one Recce Group (No. 10) and Air Support Parties attached to it.

c) Probably both Tactical Air Commands were intended for support on an American Army each. But for this it was still necessary to bring them up to strength with flying formations in sufficient strength. The invasion need not be expected until this had taken place.

d) The fighter units of the 9th Air Force - only one Wing, stated by some prisoners to be 70, by others 100 Wing - were subordinated to IX Fighter Command and were attached to 8th Air Force. They were stationed in the area of the Wash and flew, like the fighters of VIII Fighter Command, escort for heavy bombers. Their return to 9th Air Force was taken to be a sure sign of the impending beginning of the invasion.

In the middle of May, the expected development took place; it was recognized as follows :

a) Changes in the ground radio networks of the 9th Air Force took place which, in consequence of the simultaneous change of call-signs, could not be elucidated, but nevertheless were taken as a warning.

b) The fighter units of 70 Wing ceased to be subordinated to the 8th Air Force and took over frequencies of the 9th Air Force. At the same time they moved from the area of the Wash to South-East England (Maidstone area).

c) All of a sudden there appeared American Fighter R/T traffics as well on numerous new frequencies; these traffics, on the basis of the frequencies, belonged to the 9th Air Force and showed a division into two groups:

aa) A fairly large group of 10 or 11 Groups in South England, somewhere in the Middle Wallop area.

bb) A somewhat smaller group of about 8 Groups, amongst them the Groups of 70th Wing in South East England.

It was easy to conclude that this was the expected bringing up to strength of IX and XIX Tactical Air Commands. It was at first not clear which of the two formations was the IXth T.A.C. and which the XIXth.

5. Concentration of IX Troop Carrier Command.

The following information on this subject was available:

a) In the HQ Wireless net of the 9th Air Force, there appeared a new, at first unidentified, wireless station; this was D/F'ed in the Cottesmore-Grantham area. This wireless station was also identified as the control station in three subsidiary wireless nets whose subsidiary wireless stations were situated in the three following areas :

aa) Area Grantham - Cottesmore.
bb) Area Aldermaston.
cc) Area Exeter.

b) In ground to air wireless traffic there appeared over Great Britain numerous American aircraft which did not belong to the known formations. It was at first assumed that a further Bombardment Division of VIII Bomber Command was being set up.

It became apparent, however, that the aircraft were twin-engined and were presumably carrying-out transport duties.

From the statistical examination of the Station Calls and from other indications which I cannot now remember a strength of roughly 1000 aircraft was calculated.

The aircraft carried out a lively shuttle service chiefly between the areas listed under a).

c) From decoded messages in Bomber Code it became known that the above named aircraft were predominantly or exclusively of Type C47.

In one Bomber Code message the 50th Wing was named. (Since the 51st Wing was known as a Transport Wing in Italy, the 50th Wing would apparently also be a Transport formation - a further indication of Transport aircraft).

d) The monitoring of short-wave R/T traffic of Fulbeck aerodrome (Coltesmore-Grantham area), frequency approximately 5100 kcs, showed that on this airfield practices with freight carrying gliders were carried out. During these, reports in the following form were currently heard :

"Have you the Glider in tow ?"
"Can you see the match-box ?"
"There is a 9-ship formation C 47 with Gliders in tow".

From the various indications it could, in the course of time be stated with certainty that a strong transport formation with approximately 1000 type C 47 aircraft and gliders was subordinated to the IX Air Force. (These observations were later confirmed from captured material. This was the IX Troop Carrier Command). A large air-landing operation at the beginning of the Invasion was therefore certainly to be reckoned with.

6. Concentration of the 38th RAF Group.

The wireless traffic of the 38th RAF Group was less easy to see through. The Ground wireless net of this Group was, however, already clarified at the time of the Army Co-operation Cmd. The frequency of the HQ transmitter in Netheravon (as far as I can remember 3900 kcs last call-sign 9 WZ) was also known.
In the ground to air traffic Bomber Code messages occasionally appeared which after de-coding made it clear that the 38th Group also was preparing air-landing operations with towed freight carrying gliders and dropping of parachute troops.
Wireless links of the 2nd TAF were a further indication that 38 Group would be drawn on for air-landing operations at the beginning of the Invasion.

7. In the second half of May it was determined that American aircraft control stations on warships were practising signals links with the Air Support Parties which were on land. D/F results indicated the sea area off Plymouth and Southampton.

This made it clear that embarkation had now begun
At the end of May Sigint issued Invasion Warning in roughly the following form :

"All preparations by the British and American Air Forces are complete. 2 British and 2 American Close Support Corps for the support of four armies are available. The embarkation of Air Force Staffs has begun. The beginning of a large scale landing must now be reckoned with any day".

On the basis of the results of Sigint and of the target areas of the allied air force, the Landing was expected between Calais and Cherbourg by the GAF Ops Staff I.C.

The landing itself was picked up during the night of the 5th to 6th June, 1944, as follows :

1) Shortly before midnight, lively activity of 100th RAF Group commenced obviously for the purpose of neutralising the German Radar Sets on the channel coast.

The jamming screen moved slowly from East to West, so that it was immediately assumed that the jamming was screening a large shipping formation.

2) The weather reconnaissance for the VIII and IX Bomber Commands and the assembly of the VIII Bomber Command began long before the normal time on 6/6. This striking advancement of the take-off times indicated that something special was under way.

3) The approach of the landing fleet itself took place in complete wireless silence.

The wireless traffic which began after the landing was intercepted and immediately evaluated in the prepared form.

VI. Predictions of Allied Offensives.

A) General.

It was soon apparent that certain Air Force formations were closely connected with certain Army formations, e.g.:

The 83rd Group	supported	the	2nd British Army.
The 84th Group	"	"	1st Canadian Army.
The IX T.A.C.	"	"	1st U.S. Army.
The XIX T.A.C.	"	"	3rd U.S. Army.

From moves, reinforcements or other changes of the Air Force formations, conclusions could be reached currently on corresponding changes in the Army deployment, formation of points of main effort and intentions of attack.

Also the monitoring of the wireless traffic of the Tentacle and Air Support Parties produced similar indications.

In this connection the work of Sigint was facilitated very much by the rigid call sign usage of the A.E.A.F. (No change of call signs from May 1944 until the end of the war).

The Air Force Sigint, therefore, could often pass important reports to the Army, moreover at a time when the Army Sigint could achieve no results on account of wireless silence in the British and American armies or owing to the army's good wireless discipline.

B. First Employment of 9 US Army in the AACHEN area, November Offensive 1944.

The setting up of a new Tactical Air Command and with it the impending employment of a new U.S. Army was known at almost the same time by :-

1) The appearance of a new wireless station in the HQ network of the 9th Air Force which was simultaneously control station in a subordinate network. It was known that it must be a new T.A.C. since Group wireless stations left the networks of other T.A.C.'s and joined the new network with their old callsigns.

2) From decoded M 209 messages, in which the XXIX T.A.C. was named.

3) From the monitoring of R/T on ultra short waves : Appearance of ROSALIE (HQ XXIX TAC); appearance of new frequency groups; departure of Groups from the IX and XIX T.A.C. and their appearance on the frequencies of the XXIX T.A.C.

D/F results showed that the HQ's of the IX and the XXIX T.A.C.'s were situated in approximately the same area, namely West and North West of Aachen respectively. Also the Groups formed a clear Schwerpunkt in this area.

In the area of the 3rd and 7th U.S. Armies, Air Support Parties disappeared only to turn up again a short time later in the areas West and North-West of Aachen. Thus, it became clear that the 3rd and 7th armies had given up divisions to the 1st and 9th armies.

On the basis of these results, an offensive in the general area of Aachen could be foretold with certainty.

C. Last Allied Offensive in the West, February-March, 1945.

The German Ardennes Offensive of 16.12.44 had caused considerable regrouping in its first stages. For the defence the flying units were first of all subordinated to the IX T.A.C. At the commencement of the counter-offensive of the 3rd Army, the bulk of the Groups came under the command of the XIX T.A.C., to which 8 or 9 Fighter Groups were at that time subordinated, while the XXIX T.A.C. was almost completely denuded and now only disposed of 2 Fighter Groups.

As support for the 9th Air Force, the 8th Air Force had transferred 2 Fighter Groups from Great Britain to France, these flew escort protection for medium bomber formations.

After the German offensive had been warded off, preparations for a new allied offensive were immediately recognised again as follows :

1) The XII T.A.C. was strengthened by 2 Groups of the XXII T.A.C. from Italy and in return gave back one Group to the XIX T.A.C.

2) The IX, XIX and XXIX T.A.C. each had subordinated to it 5 fighter and 1 Tact/Recce Group.

3) The HQ and the units of 34th Group moved in a north-easterly direction; this indicated offensive intentions of the 1st Canadian Army.
4) Almost all the Tentacles of the 21st Army Group were subordinated to the 1st Canadian Army, thus it became clear that this army had to make the initial thrust.
5) Shortly before the offensive it was determined, by means of D/F results, that the advanced HQ of the 9th Air Force had transferred from LUXEMBURG to NAMUR. Thus it was clear that the Schwerpunkt of the attack was again to be expected in the northern sector of the West front.
6) The advanced HQ of the AEAF was heard again after a fairly long time and was D/F'ed in the REIMS area. This re-appearance of the AEAF advanced HQ also suggested the impending commencement of an offensive.

VII. Advance Warnings based on Air Support Wireless Traffic.

a. Telegraphy (W/T).

As described in the report: "Monitoring of the landing near DIEPPE on 19/8/42 by the German Sigint", the air support wireless traffic between the Air Force and the Army presented many possibilities of evaluation. These possibilities were studied in detail by means of an accurate monitoring of all the exercises carried out in Great Britain in the period from after DIEPPE until Spring 1944, and the following preparations for evaluation in the event of Invasion were made :

1) Setting up of Reporting Centre II in the Paris area with the main task of monitoring the tactical Air Force (AEAF) for the German Air Force and Army units stationed in the West.
2) Supplying of all German army and air Force HQ's down to divisional level with the Special Wireless Code for the encoding of the warning and situation wireless broadcasts of Reporting Centre II.
3) The construction, at the same time, of signals links necessary for line reports of Reporting Centre II to all high HQ's, e.g. Luftflotte 3, C in C West etc.
4) Preparations for the move back of listening units and preparation for the event of listening units falling out. All intercept stations received the necessary data to enable them to cover other sectors in case of emergency.

Immediately after the landing, the expected wireless traffic started. It dealt predominantly with request for air support by the British Tentacles and American air support parties in the following form.

1) Tentacles

A) Guns in V 2012 (Description of Target)
B) Bombers (Suggested type of aircraft)
C) 1120 (Desired Time of operation)
D) Mot S of river (Special instructions in order to avoid shot on own troops)
E) Light A/A (Defence to be expected)

2) Air Support Parties.

A) PLW/4 (Call sign and demand number of the ASP)

B) Enemy tanks at V 8013) (Description of target)

C),D), E) and F) Similar to 1) Tentacles.

The German intercept operators were urged to look out especially for such messages and immediately at the commencement of the transmission to call the Head of the Watch. When the American or British wireless operators had sent the headings A., B and C so that the target and time of operation was apparent, the warning report was then immediately circulated even if the message was not yet completely transmitted. By this means valuable minutes were won.

In many cases it was later reported by the Air Force or Army formations that the warning had arrived in time and that it had been possible to institute counter measures.

Messages of this type were later often encoded on the SLIDEX code. Decoding, however, went so well on many days that almost no delay occurred as a result of the encoding.

Further possibilities for warning resulted from the transmission of reconnaissance results in various wireless networks, amongst others in the "Tactical Reconnaissance Broadcast" of the armies. By this means it was possible to establish:

1) Reconnaissance Schwerpunkts (each single report was marked on a map).
2) Recognised concentrations at railway station, troop concentrations, traffic movements, positions, battle HQ's etc.

Co-operation with the Reichsbahn was especially close, they received currently all reconnaissance reports on railway concentrations and took counter measures in so far as it was possible.

B. Telephony (R/T).

After the American break through at Avranches, the Americans went over to sending almost the entire air support wireless traffic in R/T on ultra short waves. The Schwerpunkt of the fighter control was transferred from the HQ's of the TAC's to the Air Support Parties, who were operating with the armoured spear-heads or at Schwerpunkts. As a result of their great air superiority the Americans were able to provide an air umbrella continuously over their attack spear-heads, this was recalled when necessary by the ASP's and directed to worthwhile targets.

Owing to these altered operational tactics and in consequence of various transfers, the warning activity of Reporting Centre II was interrupted for some time. By means of experimental Trupps operating close to the Front it was determined that the new American procedure also offered good chances for evaluation to the German Sigint. Only after the stabilisation of the West Front in September, 1944, could a start be made to utilize these possibilities to the full.

It had become evident that the space of time between the indication of the target by the ASP's and the attack itself was too short to warn in time our own units by the previous methods - which had been correct for W/T intercepts.
(Previous reporting route:
Reception at the intercept station.
Transmission via landline or wireless to Reporting Centre II.
Encoding of the message there.
Broadcast wireless warning.
Receipt of the wireless warning by armies, divisions, etc.
Decoding.
Transmission of report to the threatened formation).

Even in the most favourable circumstance a delay of the report from 15 to 20 minutes had to be reckoned with. New procedure would have to be used, therefore, for the immediate evaluation of the ASP traffic on ultra short waves. Small and extra-small ultra short wave intercept Trupps (motorized) were set up and allocated to the Air Force Liaison HQ's with Army Groups, armies, army corps, and expecially important divisions. These Trupps had only to monitor the Tactical Air Command operating in its own sector. The use of these Trupps was fully justified. It was attempted to employ them in the British sector, unsuccessfully, however, since the Tentacles were using W/T as hitherto and the R/T traffic of the 83rd and 84th Groups presented few possibilities of advance warnings. The author was employed as commander of such a Trupp with the 5 Panzer Army and the 11 Panzer Division in the Alsace-Lorraine sector and later in the Aachen area.

Examples of Warning Reports in the sector of the 5th German Panzer Army which was opposite the 3rd U.S. Army (XIX TAC).

Callsigns :	Ripsaw	HQ XIX TAC.
	Limber	2nd French Armoured Div (ASP).
	Egg cup	ASP 4th US Armoured Div.
	Vibrate	Squadron Callsign of a Squadron of XIX TAC.
	Rabbi	Squadron Callsign of a recce Squadron of XIX TAC.

Vibrate leader to Ripsaw : We are airborne now.
Ripsaw : OK, go to Eggcup, he has a target for you.

Vibrate leader to Eggcup: Have you any targets for me ?
Eggcup : Yes, I have a target for you. There is an important Command Post in the farm at Q 3859, I repeat Q 3859.

Vibrate Leader : I repeat, CP at Q 3859.
Evaluation : Advance warning to the Battle HQ concerned (the locations given in the Modified System could be read)

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Success : 11 minutes remained until the attack. Personnel and the most important material of the threatened HQ could be moved to safety.

2) During a German counter thrust in the Luneville area, the 2nd French Armoured Division got into difficulties. This was recognized by the fact that Limber, the ASP of this division, continually requested support from all available aircraft :

"Limber calling trouble".

The enemy's weak point thus recognized was exploited as fully as was then possible by the Command.

3) During a flight undertaken during the late afternoon, the Vibrate Squadron was referred to "Limber".

Limber: There are about 10 enemy tanks in the village at V 3852.

Vibrate Leader : We are in the target area but I can't see anything, it's too late for to-day.

Limber : OK, return to base. We shall attack these targets tomorrow morning.

Evaluation : Advance warning to the tank forces concerned.

Success : Tanks changed position. Fighter bombers did not find the target on the following morning.

4) Rabbi green to Ripsaw : I have a good target for bombers. In the marshalling yard of Saarburg there are many trains with tanks and guns.

Evaluation : Advance report to the Reichsbahn.

Success : Railway stations could often be evacuated in time.

The warning reports did not arrive in time in every case, on the contrary the fighter bombers were usually victorious in the fight against time. Nevertheless, the warning arrived in time in so many cases that the employment of the Trupps (so called W/T Listening Liaison Detachments) was worth while and the Trupps were very popular with the Army.

In addition the Trupps proved their worth thus :

1) The W/T Listening Liaison Detachments were in the position constantly to give their army HQ's such a good picture of the air situation in their own sector that many arrangements, especially regarding supply could accordingly be made. Example of an air situation report for one day :

0830 hours : Complete inactivity in own sector.

0910 hours : Allied reconnaissance aircraft report bad visibility. Fighter bomber operations are not to be reckoned with for the moment.

1025 hours : Improvement in the weather. First fighter bomber squadron takes off. Receives the order to fly into the Metz area.

1030 hours : A further 3 fighter-bomber squadrons take off. Fighter-bomber Schwerpunkt in area of Metz. In the southern sector (Nancy-Luneville) no fighter-bomber activity to be expected for the moment.

1115 hours : Fighter-bomber squadrons on the return flight to their airfields. No new take-offs picked up.

1230 hours : Deterioration of the weather apparently makes further take offs impossible. Fresh fighter-bomber operations are no longer to be expected for the moment.

1430 hours : Complete inactivity in own sector.

1700 hours: In own sector continuing inactivity.

2) In addition, the Trupps also monitored purely army traffic, e.g. Tanks' R/T, artillery R/T (also artillery spotting aircraft), R/T of advanced observation posts etc. This R/T traffic was established in the wave band between 20 and 40 mcs. and repeatedly produced indications of offensive intentions, moves of enemy forces, etc.

The Army Sigint was far behind developments in regard to the monitoring of R/T traffic.

3) The Air Support Parties had fixed call names which were only very seldom changed and which were tied up with the tactical Army unit. The Air Support Party of the 80th Inf. Division, for instance, had constantly the cover name "Ironclad". The monitoring of the R/T traffic of the Air Support Parties on ultra short waves, therefore, made it possible to recognize exactly the deployment of the army, since :-

a) the Air Support Parties constantly passed traffic on frequencies of the Army (i.e. of Tactical Air Command) to which their divisions were allotted. Thus if "Ironclad" appeared under "Ripsaw" it could be deducted with certainty that the 80th infantry division was subordinate to the 3rd Army.

b) the target areas, in which the Air Support Parties controlled the fighter-bombers, were always situated in front of the battle sector of their respective division. Therefore, if "Ironclad" called for the engagement of Targets in the Chateau Salin area, it was immediately clear that the 80th Infantry Division was employed there.

VIII. Predictions of Air Landings.

The German Sigint had the least success with the monitoring of the large scale air landings.

Normandy	June, 1944
Arnhem-Eindhoven	September 1944
Bastogne, air supplying	December 1944.

Though the concentrations of the IX Troop Carrier Command and the 38th RAF Group were recognized before the Invasion (cf. pages 16 and 17), the Air Landing operation itself was, however, not picked up at all. Only from P/W statements and from captured material was it subsequently known that (as expected) the IX Troop Carrier Command and the 38th RAF Group and the 44th (or 46th ?) RAF Group had actually flown.

Two possible reasons for this failure of Sigint were :

1) The wireless discipline of the transport formations during these operations had been so good that no interception was actually possible.
2) The German intercept company had failed.

Probably the truth lay between these reasons. After the withdrawal from France the monitoring of the transport formations was re-organised. The commitment was transferred from the III/Listening Regiment West (Bomber-Monitoring, new designation L.N. Funk Aufkl. Abt 357) to a newly set up company (11) of Wireless Listening Regiment West (renamed L.N. Funkaufkl. Regiment 351), with personnel and equipment.

During the Arnhem-Eindhoven Air Landing operation in September, 1944, this re-organization was actually being carried out, for this reason, therefore, this operation too was not picked up. The successful warding off of the British air landing near Arnhem cannot, therefore, be attributed to the operation of German Sigint.

Monitoring by the new company brought better results for operational evaluation. Neither was the new company in the position to pick up the large scale operation of the IX Troop Carrier Command for supplying the American army formations encircled near Bastogne.

Only during the last allied large scale air landing operation nearBocholt at the end of March, 1945, could an advance warning be given about an hour before the air landing and from thence onwards the flying route of the formation (from France to the destination) could be currently tracked. In this case, too, however, the results of Sigint did not come from the monitoring of the wireless traffic of the Transport aircraft themselves but from the monitoring of the American Aircraft Reporting Service (Wildkatzen Reports cf pages 9 and 10).

The concentration for this large scale operation had again been recognized, however, but without the possibility of predicting the time and location of the air landing. The following monitoring results were available :

1) The 52 and 53 Wing of the IX T.C.C. were transferring from Great Britain to France where the 50th Wing had already been stationed for a fairly long time. These transfers took place to the accompaniment of a rather large amount of plain language wireless traffic, and were regarded as the first indication of a fairly large air landing planned from France.

2) From Army Sigint it had been recognised that both of the American Elite Divisions (82nd and 101st A/b divisions) which were above all considered likely for air landing operations, had been withdrawn from employment at the Front. No reports on their whereabouts were then immediately available.

3) From Police wireless (Military Police ?) it was known that one of the two divisions was en route to Mourmelon (a camp near Rheims). The message in question was in roughly the following wording :

> "The road from .... to Mourmelon will be barred to all traffic tomorrow morning from 9 to 11 o'clock, because the ... (82nd or 101st, which of the two divisions I can no longer remember) is going to Mourmelon with 1000 vehicles."

4) German photo-reconnaissance, carried out as a result of this, quickly confirmed the occupation of Mourmelon with very many tents (roughly 1700 10-man tents) and with C 47 Transport aircraft.
Details were also available concerning the whereabouts of the other A/b division. Even so, certain wireless signs of the transport formation, and wireless silence of the HQ transmitter gave indications of the operation. Details, however, are no longer known by the author.

12.8.45.

Organisation and tasks of Section Party B of Chi Stelle Ob.d.L.

I. Tasks

Chi Stelle Ob.d.L. was the highest authority for the German air force sigint for all specialist matters. It directed the operation of the listening service in accordance with the demands of the G.A.F. Ops Staff, was responsible for the final operational evaluation of results of listening service and for reporting them to the G.A.F. Ops Staff, and ensured co-operation with the sigint services of the other arms of the Wehrmacht (army and navy).

The Chi Stelle was subdivided into the following sections :

Section	A	personnel and equipment
"	B	monitoring West
"	C	monitoring South (Mediterranean)
"	D	monitoring Eastern Europe
"	B5	monitoring USAAF outside Europe
"	E1	cryptanalysis East
"	E2	cryptanalysis West and South.

II. Location and personnel.

After the campaign in France in 1940, section B moved from Potsdam-Marstall to Asnieres near Paris. It was thought to be better to have the operational evaluation near the intercept units rather than near the HQ (GAF Ops Staff) which was to be served. The correctness of this view became more and more apparent in the course of time and thus other sections also (for example B 5 and C) took similar action.

Originally the personnel of section B consisted primarily of Reichsangestellte in civilian clothes who had already been working for the same service in peacetime. To reinforce these Reichsangestellte a large number of soldiers - mostly university men with knowledge of languages or business men - were transferred to work in section B. The distinction between the Reichsangestellte and the soldiers became more and more nebulous, as on the one hand the Reichsangestellte were called up, much against their will (usually they received only a minor N.C.O.'s rank and were disgruntled), on the other hand the soldiers became familiar with the work and in some cases obtained better results than the Reichsangestellte.

In contrast to many other organisations of sigint, section B has had for years an unvarying policy regarding personnel, viz. little change of personnel and a great deal of training. Burdening of personnel with military duties (parades etc.) was cut down to an absolute minimum; as a result, keenness in work was promoted. There was a good spirit of comradeship. For disciplinary purposes the personnel belonged - as long as there were no vacancies in the Chi-Stelle - to 13/Ob.d.L, which was subordinated in 1944 to LN. Radio Listening Regt. West.

At the end of 1942 - beginning of 1943, some of the auxiliary personnel (statisticians, clerks) were replaced by LN. female auxiliaries. Sometimes these female auxiliaries were better than the soldiers, in work as assistants. On the other hand, attempts to employ the women on independent work in evaluation, apart from a few exceptions, were not successful.

The strength of Section B about the middle of May, 1944, including personnel detached to the Dulag, but not including Section B 5 (USA) was about :

4 officers, 3 officials,
45 NCO's and men,
25 female auxiliaries.

After the move back from France in August, 1944, section B, together with the Regimental evaluation section (first of all called W. Control ((W. Leit)) 5, then 14/3, and later 25/351) moved to Limburg. By this means it was possible to eliminate much duplication of work and reduce the personnel to about half.

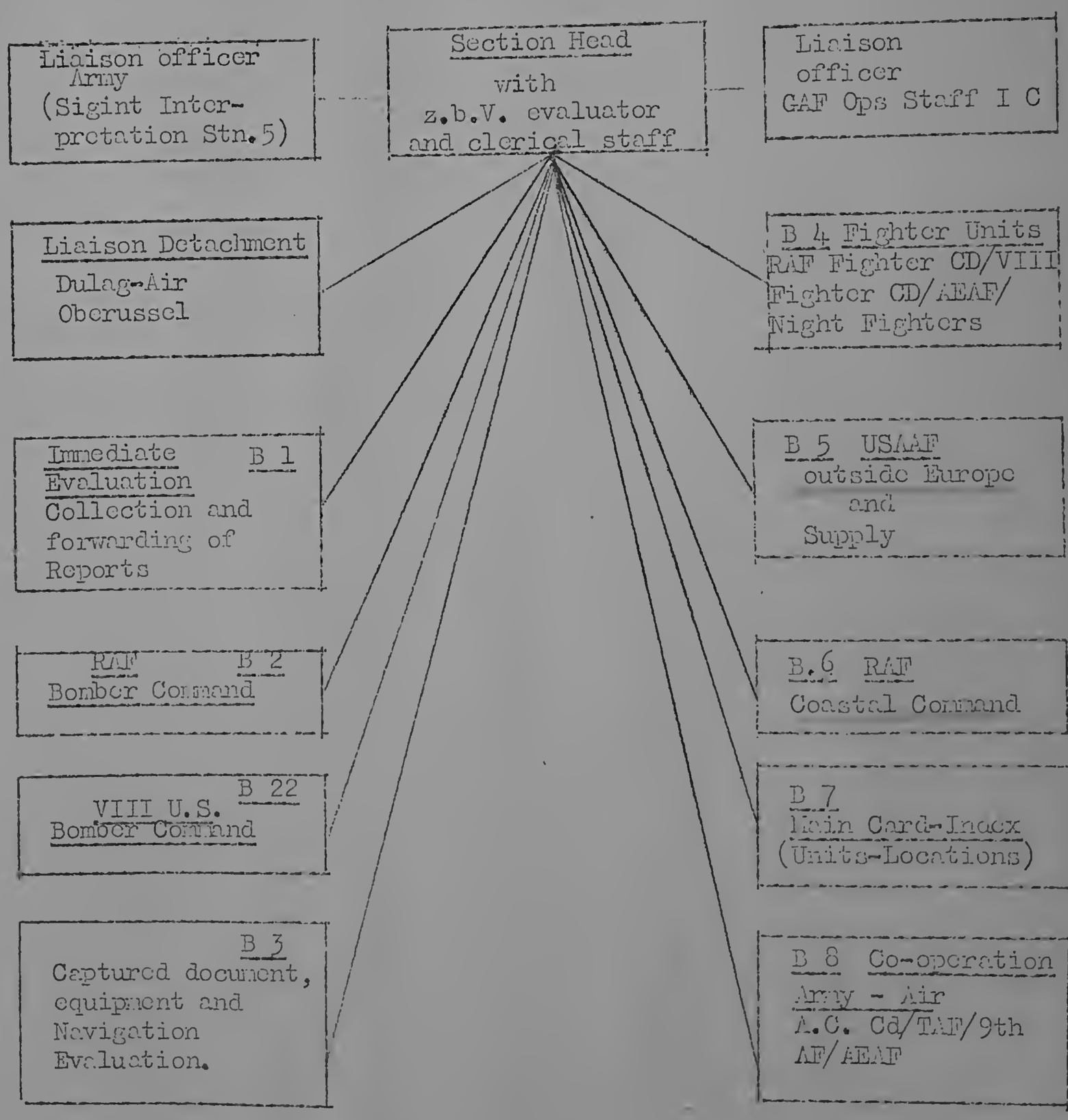
III. Organisation of the Section.

In the matter of the most expedient organisation of the evaluation section there were the following schools of thought :

A. Division according to sources of information, thus :
   1. W/T evaluation.
   2. R/T evaluation.
   3. D/F evaluation.
   4. Final evaluation (combining the results of 1-3).

B. Division according to tactical units, corresponding to the organisation of the enemy, thus for example :
   1. RAF Bomber Command.
   2. RAF Fighter Command.
   3. 8 US Air Force etc, etc.

The second solution proved suitable for operational evaluation in the West and resulted in the section being organized as follows :



¤) B 5 became a separate section in 1944.

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IV. Method of working.

A. Evaluation.

Section B, as the operational evaluation office, had the task of combining and co-ordinating the results of the units operating in the West (LN. Fu Aufkl. Regt. West, later LN Funkaufkl. Regt. 351 and LN. Funkaufkl. Abt 357) and the Abteilung in Norway (III/LN. Regt. 5, later LN. Funkaufkl. Abt 355). In this work, Section B based itself in part on the evaluation results of the Intercept and Evaluation Companies, but it also did evaluation itself on the basis of operators' original intercepts (day reports). The principle material at its disposal was :

1. The daily radio situation reports of the intercept or evaluation companies, which were mostly sent in by teleprinter, but sometimes also by wireless or by courier.
2. The detailed composite reports of the intercept companies (appearing monthly)..
3. Sometimes, especially for R/T evaluation, the original intercepts of the operators (day reports).
4. Other sources of information: Ps/W statements, captured material, press and wireless (especially BBC) etc. These sources served to supplement or elucidate the section's own findings. Great care was taken to see that no Sigint information was mixed in with this. If recource was had to other sources, these had to be named.

In addition there were very good signals communications available, and they were much used for exchange of views of specialist with specialist between the Section and the intercept stations.

With the division of labour largely clarified, the specialists of section B had now only to keep up to date and to clear up in co-operation with the Dulag and the relevant intercept unit any changes which occurred.

If there appeared any new fields (e.g. appearance of the USAAF in Great Britain, setting-up of 2nd TAF etc.) it was the task of Section B to encourage its advancement by using the best evaluators and to keep giving encouragement to the sigint units.

In this connection, it proved advantageous not to have the personnel subordinated to LN. Regt West and thus to Luftflotte 3. In this way it was possible to announce all findings, and also to raise any necessary complaints, without regard for rank or appointment. On the other hand much duplication of work was caused by this peculiar position of Section B, and for this reason many people held the view, personnel of Section B included, that the best solution would be to incorporate the Section in the Regimental evaluation section (25/351). Quite a satisfactory solution of these questions was reached by their being later brought together in the same area at Limburg, as mentioned above.

B. Control of Listening.

After operational evaluation the control of listening was the most important task of Section B. It was the ambition of all intercept stations as far as possible only to monitor such traffics as yielded many messages and thus offered many possibilities of achieving externally visible successes. Against this, section B had to see that not only the popular frequencies but also all traffics important for obtaining a complete picture were monitored. Thus, for example, a good many companies could only by the exercise of pressure be persuaded to pick up the many ground networks of the R/F and USAAF, because on these networks they never got any immediate reports for the flying units. It was, however, very important to monitor these networks because they clearly showed the order of battle.

When new fields came up, the intercept units often tried to keep to their accustomed monitoring programme and to pass off new tasks to other departments. In these cases Section B always had to control interception according to the exigencies of the situation and often do the evaluation itself for the time being. The necessary instructions were not issued direct by Section B to the companies, but via the higher formation, thus, for example, LN Regt. West.

C. Captured Material, - Equipment, - and Navigational Evaluation.

The German Sigint service was greatly helped in its work by the plentiful captured material from aircraft shot down. With the rise in the number of sorties, and (at least until the smashing of the German defences) the corresponding risein the figures of losses, the amount of material captured also rose, espcecially the following items :

1. X- or Q- group lists.
2. Call-sign lists (R/T and W/T).
3. Frequency lists (chiefly W/T).
4. Bomber Codes.
5. Airfield lists giving exact data on station callsigns and frequencies, position of airfields, radio-beacons, etc. (especially frequently found in aircraft of VIII Bomber Command shot down).
6. Note-books with important entries.
7. Lists of radio-beacons and other navigational aids.
8. Descriptions of apparatuses.
9. Maps.
10. Radio and navigational sets.
11. Crystals from VHF-sets.

Captured material as it came in was forwarded by those salvaging it to Dulag Oberursel. If aircraft were shot down near sigint offices or stations, the officers and officials of the sigint service had the right to examine those things that interested them.

The importance of thoroughly appraising the value of this captured material for sigint has recognized and let to the setting-up of this sub-section B3 of Section B. This subsection was taken out of the Section at the end of 1944 and subordinated to the Radio Control Post (Potsdam-Eiche).

The Liaison detachment of Section B at Dulag Oberursel consisting of:-

1 technical inspector,
3 Feldwebel,
1 junior NCO or man,
1 female assistant,

was responsible for seeing that there was close co-operation between sigint and P/W interrogation and had above all to see that all captured material dealing with radio was quickly evaluated. Important findings (e.g. new call-signs or frequencies) were immediately reported by a direct telephone line to the specialist at Section B, who was responsible for its onward transmission to the intercept station. After this preliminary evaluation the whole of the captured material was sent by courier to Section B for a most detailed examination. The results of the evaluation of captured material by individual specialists were sent about once a week in so-called "Reports on captured material" to all HQ's interested.

Among the further tasks of section B 3 was the evaluation of all captured documents concerning navigation aids that came in from the following points of view :-

1. Elucidation of new systems.
2. Establishing whether any navigation aid was suitable for use by German units (as far as I remember this was the case e.g. with the Splasher radio beacon and the group radio beacons).
3. Establishing whether German radio beacons were used as navigation aids by the enemy (this was so for a considerable period).

The results of this evaluation were recorded about once a month in the "navigation reports".

The last main task of sub-section B 3 was to attend to as rapid as possible an evaluation of captured sets and crystals coming to hand, in collaboration with the salvage detachments at the Luftgaus (especially Belgium-Northern France and Holland). In the course of many personal conversations the salvage detachments were convinced of the importance of this work. Every time they examined a shot-down Allied a/c they teleprinted the information of interest to sigint roughly on the following pattern :

"Victory Nr 5870. 18.4.44, 1645 hours. 3 km N Lille airfield. Type Thunderbolt. 80% crash. Pilot captured. Squadron recognition NO. Wireless set TR 5043, not destroyed, can be collected. Spot-tuned Channel B. Receiver crystals : A-7150, B-7260, C-destroyed, D-7210. Transmitter crystals: A-destroyed, B-7640, C-7310, D destroyed."
(Not actual details, but given as an example).

On the basis of such reports - often 10-15 reports came in in a day - the following action on other things was taken :

1. Checking whether the victor was picked up in R/T traffic.
2. Establishing whether frequencies or sets of frequencies were known.
3. In case of unsolved questions, contact with Dulag, to interrogate the prisoner for this purpose.
   All the available information gleaned was reported to the interrogating officer via the liaison detachment.

Sometimes the captured wireless sets were examined in section B 3 in order to establish the frequency bands (e.g. TR 1143 of 96 - 125 mc/s, TR 5043 of 100-156 mc's), the transmitter power etc., sometimes B 3 takes over the examination results of other HQs (GL - Director-General of GAF equipment).

Close collaboration with the director general GAF equipment was ensured by a chief engineer who was permanently attached to section B by the director-general.

Sigint units were kept informed by B 3 of exact details of the type of set with which the individual units were equipped and of the sets themselves. This information was very important for the control of interception and for evaluation from the tactical point of view. For example, it became known in this way that intruder night fighters in contrast with the long range night fighters of 100 group had no "Weapon" set. When, therefore, "Weapon" sets came up, we could say that long range night fighters of 100 group were operating. As these night fighters flew near the bomber stream, the DF'ing of "Weapons" gave an indication of the bomber positions.

D. Sending in of reports.

The most important HQ's to which section B had to report were :-

GAF Ops staff I c
OKL director general signals
OKL
OKH
Dulag-Oberursel
Luftflotte 5
Chi Stelle Ob.d.L. section C.

Often reports were also given to HQ's which were really to be served by the regiment's evaluation section in the West (25/351) :-

C in C West
Luftflotte 3 or later GAF command West.

A distinction was made between the following reports :-

1. Immediate reports by teleprinter or phone. (There was no direct telephone connection with GAF ops staff).
2. Daily general review of the last 24 hours, so-called wireless situation reports.
3. 10-daily operational summary.
4. Monthly general reports. Detailed work with maps etc. Usually about 50-60 typed pages.
5. Special reports :
   e.g. "army air co-operation".
   "British night-fighter methods".
   "British sea rescue service" etc.

In addition there always existed the closest personal contact between the specialists of section B and the departments above them on the one hand and the intercept units on the other hand.

10.8.45.

Co-operation between sigint and meteorological service in the West.

For giving advice on the weather to German flying units, Allied weather reports (or even just weather indications) picked up by sigint were of great value.

The units of sigint had therefore standing instructions to pass on all weather reports direct to the nearest weather station of sigint or via the evaluation companies (e.g. of W control 3, later 14/3 or 25/351) to the weather stations of the Luftflotten.

On an average, in the area of Luftflotte 5 (Norway) alone, for example, about 300 weather reports a month were picked up by III./5 (later Ln. Funkaufkl. Abt 355). Such weather reports or indications came up for example in the following contexts :-

1. In fighter R/T traffic. Indications of bad visibility. Request to be homed back to base by D/F. Orders from base to land on other airfields as the home airfield is not serviceable for landing because of deterioration in weather conditions.
2. In bomber radio traffic ground to air or air to air : Difficulties in making formation, e.g. of the heavy American bomber units. Diversion to other airfields because of deterioration in the weather. Many requests for details of landing weather etc.
3. In radio traffic of sea recce a/c : From decoded Syko messages and details given in clear text. While monitoring sea recce a/c the 16/3 (I have forgotten the later designation of the company) and the W 22 (later 15/2) intercepted weather reports relating to the Atlantic on a particularly large scale. Among them encoded weather reports were also decoded by these stations (I have forgotten what systems.)

4. Indications in air support radio traffics, e.g. refusal of the flying control stations of requests for air support with a reference to weather conditions.

To ensure close co-operation between the meteorological service and sigint, and as a constant check that absolutely all weather reports coming in are evaluated and passed on to the meteorological service, a weather evaluator, working also in close collaboration with the director of the meteorological service, was put into service with section B. This evaluator also saw to it that messages on purely weather wireless networks, e.g. those of the 9th AF or the 2nd TAF, were passed on to the director of the meteorological service. He had further to check over all captured material coming in for weather codes etc. and to pass on such material, if necessary, to the director of the meteorological service, for further evaluation.

Under the director of the meteorological service there operated a special listening station for the interception and cryptanalysis of enemy weather messages in cipher. Its scope and success is unknown to the writer, as he has never seen the station. He only knows that there was a certain rivalry between the cryptanalytic department of the Chi-Stelle (section E) and the corresponding cryptanalytic department, of the director of the meteorological service. At the beginning of 1944 the director of the met. service took a keen interest in all wireless networks in which weather messages with the code word "Whist" appeared. This system was probably broken, it was certainly worked on.

13.8.1945.

The cryptanalysis of Allied cipher systems in the West.

I. General

The writer never worked as a cryptographer and can therefore in the following article only give general indications of systems studied, etc.

The most remunerative of sigint's targets is breaking into enemy cipher systems, in order to make use of the message content. In contrast with the Eastern front and the Mediterranean theatre of war, where cryptanalysis achieved considerable success, the results in the West were insignificant in comparison with sigint's other sources of information (e.g. R/T evaluation, D/F evaluation, traffic evaluation, Radar monitoring). This was determined by the following causes :-

1. Until the invasion important messages were only rarely sent by wireless in Great Britain but usually by line.
2. The cipher systems used proved for the most part unbreakable with the means available.

Nevertheless the German cryptanalytic service kept on striving, sometimes successfully, to see through the individual systems. Co-operation between the evaluation in the West (section B) and the cryptanalytic service (section E) cannot be described as good (in different places, lack of understanding of tactical values in the cryptanalytic section, which sometimes seemed to hold back its information or to bluff).

II. British cipher systems.

A. 4-figure code-book (general subtractor).

The system was used in RAF ground to ground traffic. The messages could be recognised by the fact that the first group was the same as the second last and the second group the same as the last.

Example : (preamble and order of first and second and of last two groups only vaguely remembered)

k7t v 3cb
op gr 11 11 1630 -
z m0b m Lp4 v 2zr (delivery groups, meaning generally made out).

1182 1796 7194 4652 7608 8478
1029 3216 1444 1182 1796 ar

Work on messages appearing in the wireless networks in Great Britain was done in section E at Potsdam-Marstall. Results were not achieved.

On the other hand, this system in the Mediterranean area was successfully broken in Spring, 1941. Work on it was done to begin with on rather a small scale in 9/40 (W-Toni), at Taormina (Sicily), later on a larger scale at W 3 Ob.d.L. (Later LN. Funkaufkl. Abt. South-East) at Athens.

A code book was never captured, as far as I know, but was recovered by the cryptanalytic section. At the most favourable period, decoding was done after 2-3 days' work, but on an average with a delay of 2-4 weeks. In spite of this delay the decode results were very valuable, for, from then the organisation and strength as well as the deployment of the RAF in the Mediterranean area could be ascertained for the first time. By complications introduced into the enciphering (change of subtractor etc.), breaking was later made much more difficult and finally impossible. But the knowledge once gained formed the basis for evaluation till the end of the war.

B. 5-letter machine cipher.

The most frequent cipher system in RAF command networks was a 5-letter machine cipher. It was worked on for some time in Potsdam in section E, but finally classed as unbreakable.

C. Sea recce a/c ciphers (Syko).

The reconnaissance a/c of Coastal Command for a long time - until about the end of 1943 - used a recipherment table (Syko machine). The messages were in groups of 4, letters and figures mixed, e.g.

k4tp ru81 zaml 3bfn

The system was worked on with good results. In the middle of 1941 there were, for example, three cryptanalytic detachments for Syko in operation :-

1. Husum - W.22.
2. Paris - W control 3.
3. Taormina - 9/40, later W control 2.

These stations exchanged the results they had achieved daily in the course of the morning, so that the day's table was recovered by about noon. From then on it was possible to decode recce reports.

Later, separate tables were used for the Mediterranean area and Coastal Command, which made breaking considerably more difficult; it did, however, go on.

The Syko system was replaced in Coastal Command at the end of '43 or the beginning of '44 by a 3-letter code-table ((Signaltafel)) changing daily. This system was worked on at Husum in 15/2 (previously W 22). The first reports of decoding reached section B at the end of the war. Results were very slight.

D. Met. systems.

Met. systems were worked on under the director of the meteorological service. I do not know what systems were broken. In Spring, '44, the units of sigint got instructions to look out for weather messages with the code word "Whist" and report the frequencies these messages were intercepted on forthwith to the director of the met-service. It must therefore be assumed that this system was broken, or at least worked on.

III. American systems.

A. M.209 (Small cipher machine).

German name for system : AM1 (American 1).
The cipher system appeared in American army and air force networks below Army Corps or Command.
Specimen message :-

BLKXS RAZLL MACDP XPYUR JMBST YCALN BLKXS RAZLL

(first and second last, second and last groups were the same: possibly the other way round - first and last, second and second last the same).

The last two letters of group 2 were the same in all messages of the day, belonging to the same traffic group.

Work on the system was done simultaneously in section E at Potsdam-Wildpark and Sigint interpretation station 5 ((NAAST 5)) at St. Germain.

As far as I remember the first messages were decoded in February, 1944, by NAAST 5. They originated from the ground networks of VIII Fighter Command (65th, 66th and 67th wing) and contained statements of an administrative nature, but also tactical indications, such as the change over to Mustangs etc.

The original of every message was sent to Potsdam, one copy to the Army. The army got better results. Because of these results the interception of such messages was stepped up considerably, from about 50 - 200-300 messages a day, with priority over other tasks.

On the invasion starting, the GAF cryptanalytic section too was finally moved from Potsdam to Paris (14/3, formerly W control 3) and close co-operation in cryptanalytical work was established with the army.

After the start of the invasion some interesting messages about the losses of the 101st Airborne Division were decoded; apart from that the decoded messages were of greater value to the Army than to the GAF.

Cryptanalysis was, as far as I remember, made more difficult later by the fact that the individual service groups (armies, commands) no longer used the same cipher setting, so that they had to be worked out separately.

As far as the GAF was concerned, therefore, each individual command was monitored and worked on in turn with all available resources. Good results were achieved in the case of IX Air Defence Command (details of A.A. units) and the IX Eng. Command (extension of airfields, effect of the V 1 bombardment on Liege airfield).

The monitoring of the networks of the Tactical Air Commands also brought results: e.g. the forming of the XXIX Tactical Air Command because known from a decoded message.

B. Large Cipher Machine (German name, system AM 2)

A letter cipher machine (groups of 5), which was used in the American command networks (army, Air Force ((Luftflotte)).

Vigorous efforts were made to break it, especially in the army. Army experts considered decipherment possible up to the end of the war. I did not hear of any results.

IV. Allied systems.

A. Bomber Code.

In use, among others, with the following units :

1. RAF Bomber Command.
2. US VIII Bomber Command.
3. US IX Bomber Command.
4. Transport units.

The code in question was a 2-letter group code table, changing daily.

The cryptanalytic section was under the command of section E and worked with 1/West, later 1/357. (Report Centre 1 .

In many cases the messages were decoded already during the course of the operation, so that command received important information for the operation of its own fighters (e.g. flying altitudes, changes of dispositions, delay in fighters' arrival etc.).

Cryptanalysis was helped by captured codes that often came in.
As far as I remember, the key was in force from 1800-1800 hours.

It happened fairly often that captured codes from a/c shot down at night were recovered so promptly, that they were already available next morning at the start of the 8th Air Force's operation.

Therefore, special instructions had been given out and commendation promised for the quick recovery and communication by teleprinter of captured codes to 1/357.

B. Slidex system.

Bigram substitution system.

In use in the army (front line units) and in air support networks (tentacle networks).

The system was known from the monitoring of exercises in Great Britain before the invasion, e.g. "Spartan". The cryptanalytic detachments in army and GAF were able to get so much experience on these exercises that decoding worked well right at the start of the invasion.

Recovery was done in the army again at NAA St 5, in the GAF in 14/3 (W control 3).

Decoding was often done with so little delay that the messages could be dealt with like clear text in the evaluation.

The results were of more importance to the army than to the GAF, but they provided the latter too with valuable indications, e.g. elucidation of the individual corps tentacle networks, reconnaissance operations (e.g. 400 and 414 Squadrons) etc.

The messages decoded daily were exchanged between Army and GAF in the form of written reports.

V. Position reporting grid.

A. Modified system (British)

The British reporting grid "Modified System" was known from captured British maps of Great Britain and North Africa.

Long before the invasion, it had been seen from air maps of Western Europe in what way the Modified System was related to the French grid "Lamberth Zone Nord de Guerre". On the basis of this knowledge, maps of France, Holland, Belgium, Heligoland Bight were prepared for all Army and G.A.F. Sigint Units with the Modified System superimposed. After the landing it immediately became apparent that the invasion forces (Air Force and Army) were giving positions according to this system. As the maps we had worked out proved to be correct, it was possible from the very beginning to read positions given according to the Modified System as if they were in clear. In many cases it was only by this means that the work of sigint (e.g. evaluation of requests for air support by Air Support Parties and Tentacles) was made possible.

Important allied positions (Bomb-lines, positions of HQ's) were often reciphered again with letters. As far as I remember such reports could not be interpreted.

B. Jones Template (American grid).

This grid was often used on American Air Force - Army exercises in Great Britain before the invasion. The positions were given in letters and figures (e.g. such as Y 8 M 13).

It was clearly a system with daily changing reference points. Neither the Army nor the G.A.F. could break the positions.

C. Position, Encipherment of Coastal Command (RAF Sea Reconnaissance)

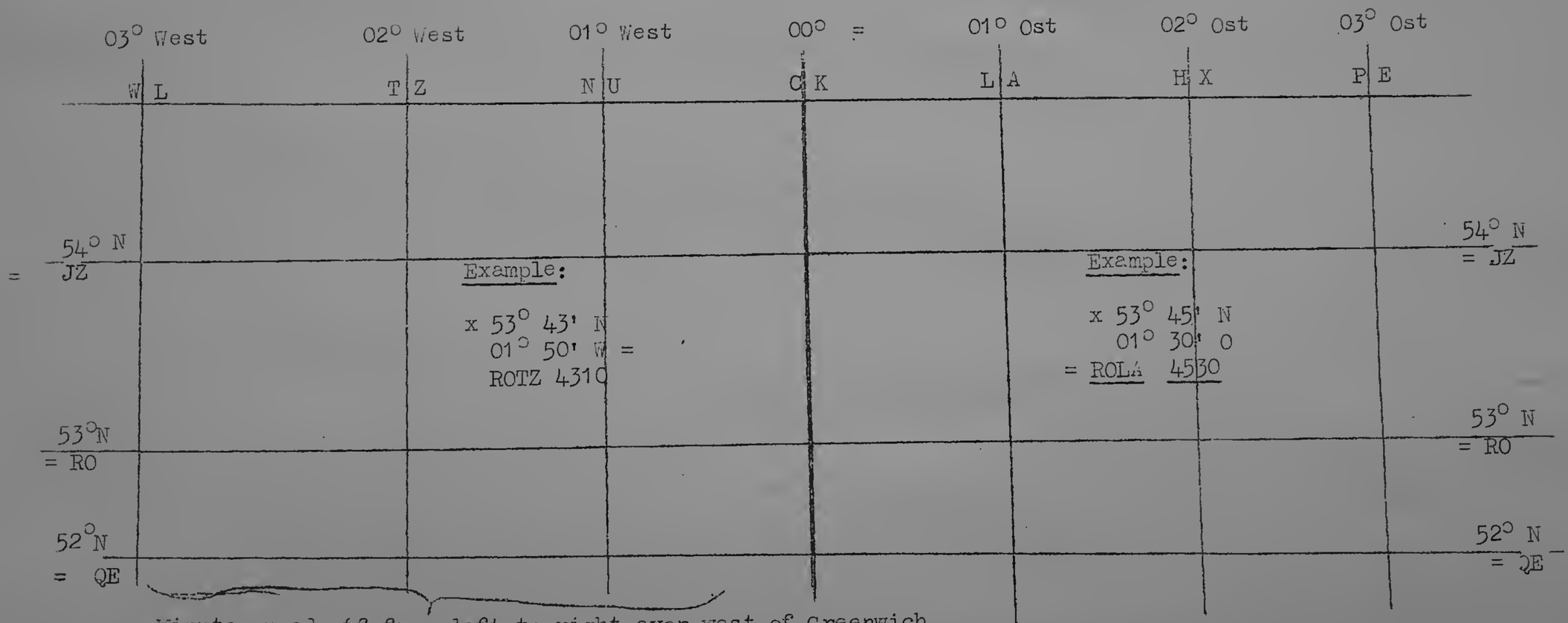
When giving positions, the degrees were always reciphered with two letters, the minutes being given in clear. In this system the degrees were given together in a 4-letter group, in the order latitude - longitude, the minutes in a 4-figure group, in the same order (cf. page 39a).

The minutes were always read off from left to right, even when west of Greenwich. The points of the compass (East, West, etc) were omitted.

Originally the reciphering was only very seldom changed. Most of the positions had been identified by sigint in collaboration with the Navy and flying units, in the following way among others :

POSITION ENCODING

R.A.F. - COASTAL COMMAND



1. By comparing the report of the British recce aircraft with our own battle reports (position at the time of the report of our own submarine, our own convoy, our own recce aircraft, etc.)
2. By D/Fing the radio traffic of the recce aircraft sending the report.
3. By reconstructing the course of this recce aircraft by means of details of course he received from his ground-station, comparedwith flying time and speed.

Later, the reciphermont changed on the 1st and 15th of every month. This considerably increased the difficulty of identifying positions in remote sea areas. But in the areas most important for naval operations (at the end of the War, North Sea, Norwegian Coastal Waters) so many reports were always coming in that the positions could be broken after only a few days. Absolute safety could probably only be attained by daily change, but in practice a 5-daily change appears to be the best solution.

VI. Traffic Signals.

A. X-Groups of the RAF.

The X-groups were used as traffic abbreviations in RAF radio traffic (W/T).
Example :

X 242 ..... Air raid alarm.
X 696 (?).. What is my frequency ?

These X-groups gave no security for complete lists fell into German hands almost daily from aircraft shot down.

B. Q-groups of the USAAF

When larger contingents of the American air force had arrived in Great Britain, the RAF came into line with the Americans and used Q-groups in place of X-groups.

With regard to security, the same applies to the Q-groups as to the X-groups.

C. Air Force Code (Naval Section).

The sea recce aircraft of Coastal Command used the Air Force Code, Naval Section, for sending their reports. RAF instructions said that important messages were to be reciphered again, because the Air Force Code offered no security.

Nevertheless, many reports were often only enciphered on the Air Force Code. As the Germans were always getting captured copies, it was possible to read this traffic like clear text.

10.8.1945.

TOP SECRET

Use of Callsigns by Allied Air Force Units in the West.

All ground wireless stations and many airborne wireless stations of the Allied Air Forces in the West were allotted fixed callsigns, which only changed very seldom (once or twice a year). The frequencies used were kept in force even longer, in some cases they never changed. This rigidity in the use of callsigns and frequencies made the work of German sigint much easier, sometimes it was the only thing which made it possible.

Details :

I. W/T callsigns.

A. RAF and USAAF.

1. Ground station callsigns.

The ground stations had callsigns which were made up of 2 letters and 1 figure (not 0, 2 or 4) in any order.

Example :

3cb, cb3, b3c, 3bc, etc.

It was not possible on the basis of callsigns alone to distinguish between American and British radio stations.

2. Airborne wireless stations.

As a rule, aircraft were allotted 4-letter callsigns. Example: MRQA. The first three letters (MRQ) were used by all the aircraft of a squadron or flight, the last letter (A) being individual to the aircraft. A different system was used by Coastal, sometimes also by Training Command, figures being used to indicate the aircraft. When on flights against the enemy the aircraft received different callsigns from operation to operation (so-called Ops Calls). This use of callsigns made it considerably more difficult for the German sigint to identify what units were operating. It was often only possible to find out from the landing traffics of the aircraft returning from ops on what ops they had been and in what strength.

For all other flights callsigns based on the Stations were used (so-called Station Calls). The station callsigns heard were for the most part known from captured material or identified by our own monitoring service. Exact statistical watching of these callsigns provided exact data on the strength of individual units, density of occupation of stations, and connections between one station and another (e.g. the fact that there were many flights from Netheravon to Tempsford indicated that there were definite connections between the agent-suppliers at Tempsford and 38 Group).

3. Delivery Groups.

There appeared in the message preambles in the ground networks delivery groups composed, like the ground station callsigns, of 2 letters and 1 figure in any order. These groups were distinguishable from callsigns in that they contained the figures 0, 2, and 4. The groups indicated to what tactical H.Q. the message in question was to be forwarded by the receiving station. The delivery groups were to some extent identified, so that they often gave indications of a tactical nature.

B. AEAF with 2nd TAF, 9th AF and later 1st USTAF.

When the 2nd TAF was set up in May, 1943, its ground stations, unlike the other air force units, used callsigns which always consisted of a letter followed by 2 figures, e.g. Y 48.

When the AEAF was set up about January, 1944, this callsign practice was also adopted by the 9th AF, and later by 1st USTAF too. From that time it was possible clearly to distinguish by means of callsigns the units belonging to the AEAF from all other air force units.

The Airborne radio stations (W/T) of the AEAF, e.g. IX Bomber Command, had the same callsign practice as described under A).

C. Interpretation of Callsigns.

In many cases sigint had to interpret callsigns without being able to have recourse to captured material, prisoners' statements or any other sources of intelligence. As an example of such an interpretation I will quote the interpretation of the wireless network of 38 Group (earlier 38 Wing) which was done as early as 1942 when this unit was still subordinated to Army Co-operation Command.

First of all the wireless stations of the ground network which had been picked up were d/fed. It was discovered that the Control Station was in the Netheravon area and the subsidiary stations roughly in the same general area. This could not be a close recce Wing of ACC, for 36 Wing was already known to be in the same area and it never happened that there were several Wings in the sphere of command of an Army Command.

While the ground to air traffic was being monitored, a new wireless station was picked up at about the same time and also D/Fed in the Netheravon area: it had all the wireless characteristics of an HQ transmitter: great signals strength, half-hourly transmission of the time and checking number. Comparisons showed that this wireless station might be identical with the control station described in the above-mentioned ground network.

The HQ wireless station was in touch with aircraft which used Bomber Code when sending reports. Some of these messages were decoded and produced evidence of transport flights with freight-carrying gliders in tow or of exercises with parachutists carried out. A little later, on an army exercise in which the air force also participated, 38 Wing was mentioned in clear in connection with freight-carrying gliders.

On the basis of these wireless data prisoners (as far as I remember, of 10 Fighter Group) were asked what was going on in the Netheravon area. It turned out that there was a training camp for parachute units not far from Netheravon (Budford ? or Buldford ?).

On the basis of all this the radio network was interpreted as "38 Wing, Transport unit of ACC for air-landing operations", and the control station as the H.Q. at Netheravon. A later comparison with captured documents in nearly every case confirmed these interpretations. No serious false appreciations were made.

In this way the whole 9th Air Force, the 2nd TAF and other units were largely interpreted long before the invasion. When a short time after the landing a complete set of wireless data, of the 9th Air Force fell into German hands, it was found that hardly any changes had to be made in the callsign interpretations that had been made.

When a wireless station or a whole network had been interpreted in this way, the picture was not lost again even when callsigns were changed.

D. Callsign change.

In general callsigns were changed at intervals of 5-6 months up to the time of the invasion. From the middle of May, 1944, until the end of the war, no further general changes of callsigns were observed (exception : changes in the use of Station Calls in Coastal Command and with some bomber units). The H.Q. of 2nd TAF for example thus kept the callsign Y 48 from the middle of May, 1944, until the end of the war, H.Q. 83rd Group C 55 etc. The change of callsigns which took place in the middle of May, 1944, was done so long before the invasion that all the important callsigns and most of the others were already interpreted again by the time the landing took place, a circumstance which greatly assisted German sigint. The difficulty of the work of the German listening service was effectively increased by another callsign change which took place on D-day itself.

When there had been no callsign changes for a long time, sigint made all preparations to counteract the effect of the enemy measure when it took place. Such preparations were :

1. Listening operators were given instruction by evaluation officers in which their attention was drawn to the importance of paying attention to the smallest mistakes made by the allied wireless operators at the time of the callsign change. Rewards were promised for especially good work at the receiver.

2. Listening operators were as far as possible always employed on the same traffic, so as to be familiar with every peculiarity of tone and procedure.

3. An emergency plan was worked out which came into force on a change of callsign and envisaged always bringing the best operators to the receivers and holding the entire evaluating staff available.

When the expected callsign change did take place, it was only a few minutes or hours till the most important callsigns (HQ transmitters) were identified. In 24 hours about 30% of the allied wireless stations were identified, the remainder in the course of the next 8-10 days by the use of D/F.

All identified callsigns were reported forthwith to the regiment's evaluation section or Chi Stelle section B by the intercept stations. There the existing interpretations were compared and cleared up in the case of contradictions and new callsigns identified beyond all doubt immediately brought to the knowledge of all outstations. Thus work as a whole proceeded with hardly a break.

The most frequent possible ways of identifying callsigns were :-

1. Mistakes in giving callsigns. In the first period after the change, the allied wireless operator, who had been familiar with his callsign for months, often gave the old callsign by mistake, then cancelled and gave the new callsign.

K 7 T .....(cancel), B L 9.

Interpretation :- K 7 T had changed to B L 9.

2. It was even enough if the wireless operator inadvertently began the old callsign and corrected himself at once :-

K 7 .... or K .. (cancel) B L 9

so let the German listening operator who knew the traffic inside out to see at once that K 7 T had changed to B L 9.

3. The wireless station was called by its old callsign and answered with its new callsign :-

K7T v KLCA int qsa
KLCA v BL9 qsa 4

From this, too, it was clear that K7T had changed to BL9.

4. It was still clearer if in the previous instance K7T had answered : My new callsign is BL9 (such give-aways were not unusual).

5. The wireless station refers under the new callsign to a message that was tapped out under the old callsign, e.g.

"Cancel my message number 13 of 0913".

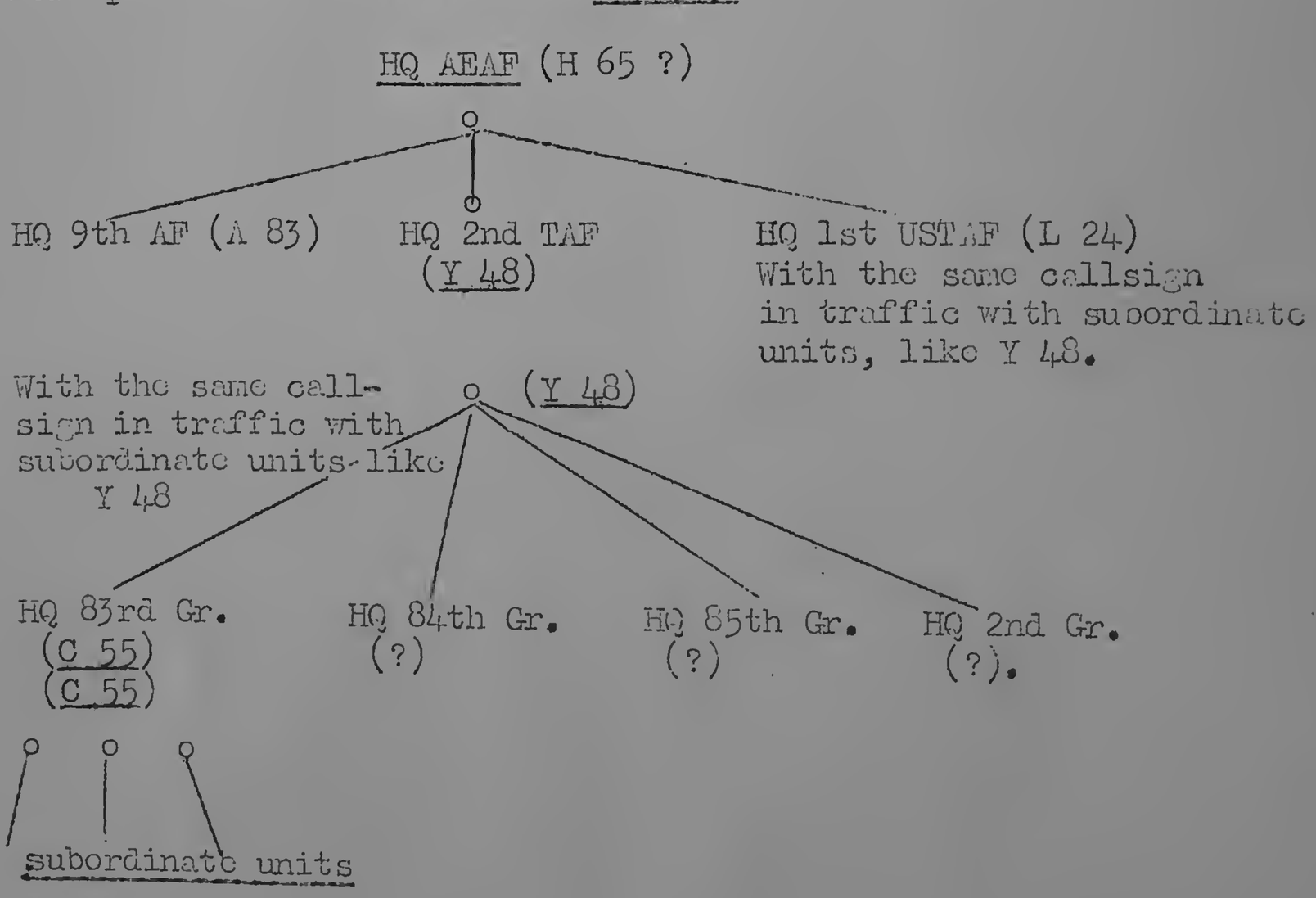
If this message had been sent by K7T and was now cancelled by BL9, the change was again evident.

6. Most HQ and many other wireless stations were re-identified by the tone and procedure of the wireless operators. That was easily possible because change of frequency did not take place at the same time as the change of callsign.

If, by means of such or similar mistakes, the control station and one out-station of a network of say 4 stations had been identified, then the line bearing of a D/F set was often enough to re-identify the remaining two wireless stations.

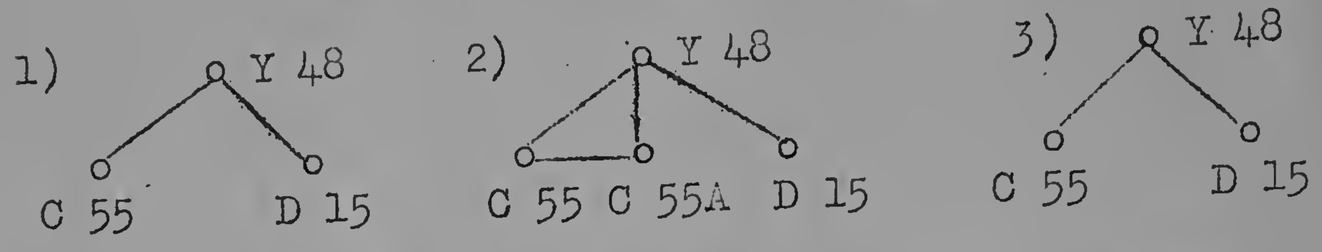
E. Clarification of unit subordinations by use of callsigns.

It proved to be specially favourable to sigint that wireless stations, which appeared in several links, used the same callsign in all networks (e.g. HQ TAF in command links to the AEAF and 9th AF and in links with subordinate units). Unit subordinations could be quickly clarified from this; for which reason, too, the ground wireless networks formed the best basis for operational evaluation. Example :-



F. Use of change of location callsigns.

Changes of location of wireless stations of the AEAF could often be recognised by the fact that an advance detachment came on the air with the same callsign but with an A or a 1 appended. The latter callsign gradually took over the traffic. After the move had been completed, first of all the old wireless station disappeared and then the appended change of location indicator (A or 1) was dropped. Example :



C 55 had moved. Change of location callsigns were at once D/F'd.

II. R/T Callsigns.

On the whole what was said under I about W/T stands for the use of R/T callsigns. The callsigns of the ground wireless stations were never changed, those of the airborne wireless stations seldom changed. The frequency sets of the units were seldom changed. Only the 2nd TAF had made things difficult for the German sigint by repeated changes of their sets of frequencies (VHF), especially at the beginning of the invasion.

Easily pronounceable cover names were used as callsigns, e.g. King Kong, X-ray, Gaysong. Ground stations were not immediately distinguishable from airborne stations by the make-up of their callsigns, but the type of traffic always made it clear in a short time whether it was a question of a ground station or an a/c.

If ground stations were subordinate to another ground station, then the subordinate stations used the main callsign with a number attached, e.g. Ripsaw 1, Ripsaw 2, etc.

A/c callsigns were usually allotted to the squadron, in American units also to the groups, in British units also to airfield wings. In the 8th US AF, larger units, e.g. divisions, had callsigns.

Flights used the squadron callsign with a colour attached, e.g. Gaysong red.

Individual a/c pilots reported with the squadron callsign, their flight designation and their flight number (e.g. Gaysong red 2) or with the squadron callsign and pilot number attached (e.g. Gaysong 32). The commander of the flying formation was called "leader", thus "Gaysong leader " etc.

I can remember the following details regarding the individual units :-

A. RAF Fighter Command.

Each station had at its disposal a certain number of callsigns which were allotted to the squadrons stationed there. If a squadron changed its station, it therefore got one of the new station's callsigns.

This system had the advantage for German sigint that, after the individual station callsigns had been identified from captured material and its own observation, the exact strength of the a/c on the individual airfields could be stated at any time. On the other hand there was the disadvantage that definite units could not be followed when they moved, unless, which often occurred, the a/c pilots said the wrong thing after the move.

B. 2nd TAF

1. Fighters of 83, 84 group.

Callsign usage was not uniform. Basically each squadron had its fixed callsign. On changes of location, these callsigns were sometimes kept on, but sometimes, too, spare callsigns of the airfield wing were used. Because of this difference in callsign treatment, the organisation into individual airfield wings could not be seen through as easily as was the case in the TACs of the 9th US AF regarding group organisation (cf. para C). But the total strength of the two groups and their stations were always known.

Evaluation of R/T traffics was sometimes made considerably more difficult by repeated changes of sets of frequencies.

2. 2nd Bomber Group.

The 2nd Bomber Group used different callsigns from operation to operation. R/T discipline was very good. Its operational activity was not very great, so that only few conclusions could be drawn from the few messages that came in. It was possible to distinguish the individual units (Mosquito wings, etc.) from one another only by the fact that sets of frequencies were identified by captured crystals.

C. 9th US Air Force.

1. IX, XIX and XXIX Tactical Air Commands.

All squadrons and groups had fixed callsigns. These callsigns were known without an exception from our own observation and from captured material. From this, we could say on every raid what unit (with what a/c it was fitted out - Lightnings, Thunderbolts etc.) was on the way. It was further possible to tell at any time how many squadrons had not yet been in action, how many had done their first operation, how many the second. These details were very important for advising our own transport officers currently.

Example :- If on days with sunset about 1800 hours, all squadrons had completed their second operation at 1735 hours, then it could be stated with some assurance that further operations were not to be expected that day and our own transport could travel on.

The individual Tactical Air Commands had fixed sets of frequencies, which were exactly known :-

A frequency	Group frequency.
B "	Frequency of the TAC.
C "	CQ frequency of the 9th AF.
D "	2nd frequency of the TAC.

If now, for example, a group was given up by the IX to the XIX TAC, this could be recognised at once in the following way :-

a) The callsigns of the group's three squadrons and the (seldom used) group callsign no longer came up on the B and D frequencies of the IX but of the XIX TAC.

b) Comparison with the W/T intercepts of the two TAC networks showed the same thing :- The group callsign had disappeared from the network of the IX TAC and appeared in the network of the XIX TAC.

In this way all changes in the organisation of the TACs and all concentrations could be recognised.

2. <u>IX Bomber Command</u> (or Bombardment Division).

The R/T callsigns were changed from operation to operation. The whole callsign system was devised on model lines and could not be elucidated in spite of every effort. Although the R/T traffics of the IX BC could nevertheless always be recognised at once by the frequencies, there were not by a long way the same chances for sigint as, for example, in the case of the TAC's. It could only rarely be stated what unit was in the air and in what strength.

C. <u>8th US Air Force</u>.

On the first appearance of the 8th US Air Force two great difficulties arose for German sigint :-

1. The available ultra short-wave receivers were designed for the frequencies of the RAF (100 - 125 mc/s) and were not adequate for intercepting the American traffics (100 - 155 mc/s).
2. The German listening operators were not accustomed to the American accent and could not catch the callsigns especially.

It was some months before these difficulties were overcome. After the American callsign system had been clarified, further monitoring brought fewer difficulties than that of British traffics.

The individual flying units (squadrons, groups, combat wings and combat divisions) had fixed callsigns. In contrast with all other units, not the squadron but the division callsign came up most in the 8th AF.

Already at the end of 1943 the callsigns and most frequencies had been so far cleared up, that as soon as R/T traffic had begun, it could be stated what unit was operating.

The very active air to air R/T traffic, especially of bombers to one another, often tempted our men to cut in to the traffic (wireless ruse traffic). On several occasions, detailed proposals on this subject were sent to OKL director-general of signals, but always rejected. It was feared that the results of the listening service would be exposed by using this ruse.

D. RAF Bomber Command.

As British a/c navigated independently, the use of R/T traffic was not necessary nearly on the same scale as in the case of the VIII US Bomber Command. British a/c usually had only short wave R/T apparatus on board for carrying on take-off and landing traffic. For some time there appeared on a frequency of 6440 kcs a so-called raid leader (master of ceremonies) who was listened to by all the a/c taking part in the raid. The monitoring of these traffics, did, it is true, bring in some interesting bits of information about the carrying out of raids but no possibilities for tactical evaluation.

Only 5 and 8 Bomber groups and the long range night fighters of 100 group worked on ultra short wave. As the writer did not work in this evaluation, he cannot give any details about the use of callsigns etc. But no striking results were obtained from monitoring.

R/T traffic on RAF daylight raids between the bombers and the escorting fighters of Fighter Command were not picked up till very lately.

E. Miscellaneous.

1. Traffics of the Air Support Parties.

The air force liaison detachments with the American army (Air Support Parties) were allotted to the army units in a fixed ratio, namely :-

Army Corps	1 ASP
Inf. Div.	1 ASP
Arm'd Div.	3 ASP's (1 for CCA, 1 for CCB, 1 for div.)

The ASP's had fixed callsigns which were exclusive to the army unit in question. The ASP of the 80th inf. div., for example, always used the callsign "Ironclad". The individual callsigns were sometimes identified by our own monitoring, sometimes known from captured material.

In September, a complete list of ASP callsigns, which proved of the greatest value to sigint, was captured in Alsace, sector of the 7th US Army.

The ASP's always used the B or D frequencies of the Tactical Air Command which supported the army and to which they were subordinate, thus :-

IX TAC	1st US Army
XII "	7th US Army
XIX "	3rd US Army
XXIX "	9th US Army.

It was therefore very easy to evaluate ASP wireless traffics for the army for operational purposes.

1. The occurrence of ASP callsigns gave away what division was operating.
2. The frequency used by the ASP's showed what army the division was subordinate to.
3. The target areas for which the ASP's called for air support revealed their exact area of operation.

It was not till about March, 1945, that the 12th US Army Group or the 9th Air Force changed its callsign system: instead of fixed callsigns, changing callsigns were introduced into R/T traffic. Since then, evaluation of R/T traffics in the manner described has no longer been possible.

2. <u>R/T traffic of Radar units.</u>

Most Radar units made their reports by W/T - if not by line. But sometimes, too, the reports were R/T'd on short wave. Towards the end of the war some such traffics were observed also on ultra short wave in the 30-40 mc/s band in the 6th US Army Group (1st USTAF) Sector.

14.8.1945.

Tasks which German Sigint could not work on at all or where monitoring had to be given up.

I. W/T traffics.

The appearance of the USAAF in Great Britain placed great difficulties in the way of sigint. Monitoring of the Americans had to be done with the means available in addition to the other tasks. Heavy demands were already being made on personnel and equipment by other tasks. The increase in work was coped with by :

1. Lengthening of periods of duty of intercept operators and evaluators.
2. Shelving of other monitoring tasks.

The following monitoring tasks were discontinued or curtailed :

1. Training Command. Ground networks and flying units.
2. Maintenance Command. Ground networks.
3. RAF Bomber Command/Operational Training Units.

OTU's had been continuously monitored until this time because the OTU's sometimes had taken part in flights over the front, and because the German command wanted to have details on these units. Monitoring was reduced to 1/3 later, i.e. only one of the three Groups (91st, 92nd, 93rd) was monitored each day with the receivers available.

4. Naval Traffics.

Many naval radio stations on the Channel had been monitored because positions of British convoys could often be discovered by this means, and they could then be attacked by the G.A.F. The changed war situation made this monitoring superfluous.

II. R/T traffics.

A. Fighter OTU's.

As long as the fighter OTU's still passed R/T traffic on short wave they could easily be monitored. This monitoring produced valuable data on numbers passed out by these schools, state of efficiency, locations etc. When the OTU's went over from short-wave to ultra short-wave, they could no longer be heard by the German intercept stations. The interpreter-operators thus made available were shortly after urgently needed for monitoring the ever increasing American R/T traffics.

B. Schools.

Other schools of all kinds - also of the Fleet Air Arm - were now only monitored in Norway by III/5 (later LN. Funkaufkl. Abt. 355). From reports picked up some conclusions could be drawn on locations, strength, and training programme of these schools. Monitoring was continued in Norway because one wanted to have interpreter-radio operators immediately available in the event of an enemy landing in Norway, and other than school traffics were only to be heard in the event of attacks on Norway. Thus monitoring served rather the purpose of continuous training of listening personnel than of tactical requirements.

III. High-speed radio traffics (W/T).

There was no systematic monitoring in the West of machine transmitters, radio teleprinters etc, probably because we lacked suitable intercept apparatus. The frequencies on which machine transmitters appeared were all determined and reported to a Special Monitoring Station in or near Berlin. I know, however, of no results from there.

IV. Ruse wireless traffics.

It was a very moot point whether one should attempt to deceive the enemy by cutting in on his R/T or W/T radio traffic. The opponents of this idea feared that this would compromise the listening service and thus endanger the continuance of their work.

On the other hand proposals for deception were worked out which seemed to promise success; and without being recognizable as ruses. Such proposals were confined almost exclusively to American R/T traffic, principally of the 8th Air Force.

For example, if we wanted to cut in on the R/T traffic of the B 17 or Liberator formations from a German aircraft, the aircraft would be fitted out with 2 or 3 wireless sets TR 5043 with the crystals of the most important combat wings and the Divisional C.O. frequencies. It was proposed to use a Ju 88 which would fly at a great height above the American formation. All sets, crypstals, and wireless data (callsigns, etc.) were available.

The idea was, on days when the nerves of the American pilots were on edge anyway as a result of the strong German defence (as at Schweinfurt 1943), to increase the general disquiet by cursing etc.

For example :

"Here are some more German fighters, what has happened to our fighters ?"

"The last B 17, the one lagging behind, fired on me. It must be a German B 17".

"I've had enough : I'm going to land in Switzerland."

In addition, any situation as it arose was to be exploited.

All such proposals were rejected by OKL, Director General of Signals. Ruse wireless traffic on these lines was therefore never carried out in the West.

16.8.45.

(Trans: WRL
HD
KUC).